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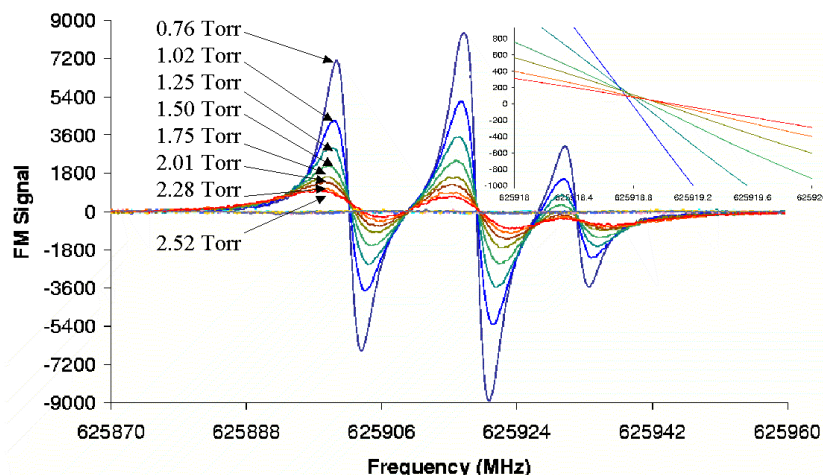
Scientific Themes: Atmospheric Chemistry, Submillimeter Spectroscopy.

Temperature Dependent Pressure Induced Lineshape of the $\text{HCl } J = 1 \leftarrow 0$ Rotational Transition in Nitrogen and Oxygen. Drouin B.J., manuscript accepted for publication in JQSRT

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Summary

The pressure induced broadening and shift of the lowest rotational transition of hydrogen chloride have been measured in both nitrogen and oxygen as a function of temperature. This work improves the accuracy of the broadening parameter and provides the first experimental parameterization of the pressure shift. The HCl air broadened half-width is determined to $<4.1\%$ across the temperature range of the stratosphere and upper troposphere.



A 210 K run of 20 mTorr 1% HCl in Nitrogen and 760-2520 mTorr Oxygen. The traces decrease in amplitude for higher pressures measured at 250 mTorr increments. The inset shows the lineshift to higher frequency for higher pressures.